The Puzzle of Jobless Growth in the Manufacturing Sector of Pakistan

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Abstract: The study aims to identify the phenomenon of jobless growth in the manufacturing sector of Pakistan. By using the panel data, collected by World Bank Enterprise Survey for the period of 2002-07, the study found the existence of jobless growth in Pakistan. Labour has been divided into four categories; production, non-production, skilled and un-skilled. The industry level results explored that non-production workers are being under-utilized except Chemical industry. Moreover, production workers are under-utilized in textile and garments and other manufacturing. The skilled workers are under-utilized in the Chemicals and other manufacturing, while un-skilled workers are under-utilized in machinery and equipment and other manufacturing. Results of the regional analysis explored over-utilization in Karachi and Sialkot, while under-utilization Peshawar and Quetta.

Key words: Unemployment · Pakistan · Jobless growth

INTRODUCTION

Currently, many developing countries have experienced the jobless growth in the manufacturing sector. In the scenario of urbanization the surplus labour of agriculture sector shift to manufacturing sector, until the marginal propensity of labour (MPL) equals marginal cost (MC) of labour in agriculture sector and remove the disguised unemployment in agriculture sector [1]. Thus the share of the manufacturing sector in the employment and GDP increases and due to this reason this sector is considered as the engine of economic growth[1].

Under-utilisation of labour is the percentage difference between the actual labour employment and the optimal employment needed to equate the marginal cost of labour with the marginal revenue generated by each additional worker [2]. Under-utilization of labour is the hiring and firing cost of labour [3]. While, in case of Pakistan under-utilization is the skill-mismatch or lower than optimal wages. Due to the mismatch of skills and lower than optimal wages the firms substitutes the labour [4]. The contribution of the manufacturing sector is the overall GDP of Pakistan is increasing with the passage of time. It gives the impression to challenge Kaldor's third law as employment growth in manufacturing has not been at par with the growth in the GDP. The industrial sector employed 13.7% of total labour force [5] and the employment elasticity with respect to GDP is only 0.02 % [6]. The labour is being substituted with non-labour factors and hence creating job-less growth[2].

There is a need to explore the causes of under-utilization of labour and capital, as well, across the industries. The study aims to explore the phenomenon of jobless growth in Pakistan. This is also the objective of the study to explore the possible factor of jobless growth in the manufacturing sector of Pakistan. Data has been taken from World Bank Investment Climate Surveys of 2002-07.

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[1]Kaldor (1966) stated that this is due to the three laws of economic growth; the faster the growth of the manufacturing sector, the faster the growth of GDP; the existence of increasing returns to scale in the manufacturing sector; and the growth for productivity for the entire economy as a whole is related to the growth in output in the manufacturing sector through labour reallocation from the other sectors to the manufacturing sector (Shaikh and Khan, 2011).

[2]Haider (2010) explored the extent of jobless growth by estimating labour demand in the seven sectors of the economy. The study also calculated the employment elasticities with respect to the growth in GDP. The employment elasticity of large scale manufacturing sector is very low relative to other sectors. The study concluded that manufacturing sector is playing a key role in the job-less growth experienced by Pakistan's economy.

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Rest study is organized as; part two discusses the literature available of this issue. Part three presents the methodology and data information, part four explains the results of the study and last part concludes the study and give some policy option in order to tackle this problem.

Review of Literature: Dasgupta and Singh (2006) used the Kaldorian framework to investigate the evidence of deindustrialisation in developing countries. The study used the data of forty eight developing countries from the period of 1990-2000. Results found that the unregistered employment in the manufacturing sector increases due to the excess labour in the agriculture sector. Moreover, manufacturing sector continues the positive contribution in the developing countries [7].

Alessindrini (2009) investigated the positive relationship among employment in manufacturing sector and agriculture sector. The study used the data of fifteen Indian states from the period of 1980-2004. The results indicate the opposite relationship between employment growth in informal sector and formal manufacturing sector. Moreover, more than 60 percent of Indian workers are still employed in agriculture and 94 percent of total labour force can be found in the unregistered segment of the economy [8].

Bhalotra (1998) found that the employment elasticity in the manufacturing sector of India is 0.15. The study used a panel of eighteen industries from the period of 1979-1988. Results of the GMM analysis investigated the -0.28 long-run elasticity in the output model and -0.44 in the capital model [9].

Fernanades and Pakes (2008) explored the overutilization of capital and under utilization of labour in the manufacturing sector of India by using the panel data from 2002-2005. Results of the study indicate increased power outages and union activity played significant role in underutilization. The extent of overutilization of capital is much smaller than the extent of underutilization of labor and does not vary a great deal across states. The study concluded that underutilization may be reduced by liberalizing the labour markets [10].

Shaikh and Khan (2011) used the data from the period of 2002-2007 in order to explore the underutilization phenomenon in Pakistan. The results indicate that jobless growth is due to the under-utilization of labour in the manufacturing sector of Pakistan. The industry wise analysis depicts that the major industries, like textile and garments, also hit by under employment. Power outages and capital substitution may be the main causes of this phenomenon [2].

Methodology: Levinsohn and Petrin (2003) methodology has been followed in order to meet the objectives of the study [11]. Assumes the Cobb-Douglas production function:

$$Y_t = \beta_o + \beta_l l_t + \beta_k k_t + \beta_l l_t + \beta_m m_t + \omega_t + \mu_t$$

Where Y_t is the firms output in logarithmic form, $\bullet$ and $\bullet$ are the logarithmic form of labour and intermediate input respectively. Moreover, l_t *and* m_t is the capital in logarithmic form. There are two components of error; transmitted component error ω_t and k_t and an error trem which is uncorrelated with inputs. It is assumed that m_t is dependent on k_t and ω_t [3].

$$m_t = m_t(k_t, \mu_t)$$

This study divided labour into four categories; production related workers, non-production workers, skilled workers and unskilled workers. Firstly, the study estimated the under/over utilization of above discussed categories of workers and capital. Secondly, in order to investigate the factors of under/over utilization of workers and capital, seemingly unrelated regression is being used. The dependent variables are under-utilization of production worker, non-production worker, skilled and un-skilled workers, respectively. The independent variables are corruption during labour inspection, unionization of workers; loss is sales due to power outage and loss of forms due to crime.

For the calculation of under/over utilization of labour and capital the actual employment needs to be compared optimal employment. There is a need to estimate the marginal cost. The input is said to be under-utilized when at actual level of employment the marginal increases of sales is greater than marginal cost. Moreover, the input is over-utilized when at actual level of employment the marginal increases of sales is less than marginal cost.

The study used the panel data of manufacturing industries of Pakistan for the period of 2002-2007. The data has been taken from Enterprise Survey conducted by World Bank[4]. This survey collected the information from 402 firms of overall Pakistan. By applying stratified random sampling technique this survey collected the firm level information regarding sales, labour, capital utilization etc.

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[3]See Levinsohn and Petrin (2003) for more detailed methodology.
[4]http://www.enterprisesurveys.org/

RESULTS

The study classified the workers into four categories and measured the under/over-utilization of labour and capital. Results investigates that among all the firms, except Chemicals, non-production workers are being under-utilized. Moreover, production workers are under-utilized in textile and garments and other manufacturing. These results are in line with Shaikh and Khan, 2011. The skilled workers are under-utilized in the Chemicals and other manufacturing while un-skilled workers are under-utilized in machinery and equipment and other manufacturing. Results depicts that capital is being over-utilized among all the industries. This was highest in the industry of electronics. These results are in line with Shaikh and Khan, 2011.

Results of the regional analysis explored over-utilization in Karachi and Sialkot, while under-utilization Peshawar and Quetta. The capital is over-utilized in all the regions. The industry of Electronics is at highest level among all the industries.

The study used seemingly unrelated regression technique which gives the correlation and direction of relationship among variables. The results investigate the positive relation of corruption with firm's productivity while explored negative relationship with under-utilization of production, non-production, skilled and un-skilled workers. The results of under-utilization of production and non-production and firm's productivity are in line with Shaikh and Khan, 2011. The corruption affects the overall performance of the industry, highlighted by several researchers [12-14].

The unionization is negatively significantly related in all the models except under-utilization of skilled workers. Firm's productivity is negatively related with the loss in sales due to power outages. Moreover, loss of crime faced by firms is negatively significantly related with the dependent variable only in the where dependent variable is productivity. The coefficient of loss in sales due to power outage is negatively significantly related with dependent variable in all the models except under-utilization of capital. The results are very much aligning to

Table 1: Industry-wise Averages

Industry	Under-utilisation of Production workers	Underutilisation of Non-production workers	Underutilisation of skilled workers	Underutilisation of un-skilled workers	Underutilisation of Capital
Food	-0.012	0.261	0.027	0.271	-0.400
Garments	0.027	0.298	0.030	0.239	-0.420
Textiles	0.009	0.467	0.527	0.329	-0.601
Machinery and Equipment	0.591	0.152	0.301	0.112	-0.017
Chemicals	-0.015	-0.041	0.017	0.301	-0.800
Electronics	-0.093	0.129	0.403	0.271	-0.926
Leather and Leather Products	-0.051	0.066	0.357	0.397	-0.057
Other Manufactures	0.067	0.002	0.019	0.010	-0.096

Table 2: Region-wise Averages

Region/City	Underutilisation of Production Workers	Underutilisation of Non-Production Workers	Underutilisation of skilled workers	Underutilisation of un-skilled workers	Underutilisation of Capital
Karachi	-0.702	0.385	0.735	0.618	-0.350
Lahore	-0.106	0.098	0.178	0.143	-0.514
Sheikhupura	0.127	0.381	0.146	0.010	-0.97
Sialkot	-0.495	0.031	0.513	0.429	-0.017
Faisalabad	-0.435	0.383	0.427	0.401	-0.392
Gujranwala	0.273	0.146	0.317	0.180	-0.017
Wazirabad	0.108	0.256	0.119	0.216	-0.222
Islamabad/Rawalpindi	0.261	0.558	0.318	0.333	-0.236
Sukkur	0.075	0.729	0.061	0.063	-0.238
Hyderabad	0.156	0.691	0.171	0.209	-0.391
Quetta	0.792	-0.662	0.718	0.690	-0.271
Peshawar	0.698	0.175	0.701	0.211	-0.441
Hub	0.689	0.962	0.579	0.891	0.008

Table 3: Under-utilisation of Production labour, Non-Production labour and Capital and Productivity.

Dependent variable	Independent Variables				
	Corruption	Unionisation	Loss in sales due to power outages	Crime	
Underutilization of production worker	-17.3***	-0.2***	-3.7**	3.90	$R^2 = 0.39$
					Adjusted $R^2 = 0.37$
					F-statistics = 7.32
Underutilization of non-production worker	9.9**	-0.8***	-2.8***	2.81	$R^2 = 0.38$
					Adjusted $R^2 = 0.37$
					F-statistics = 8.24
Underutilization of skilled worker	11.2***	1.8	-1.7**	2.70	$R^2 = 0.36$
					Adjusted $R^2 = 0.33$
					F-statistics = 4.17
Underutilization of un-skilled worker	-10.7***	-2.9***	-0.9*	4.74	$R^2 = 0.38$
					Adjusted $R^2 = 0.36$
					F-statistics = 6.39
Underutilization of capital	-19.83*	-0.63**	-0.47*	3.97	$R^2 = 0.38$
					Adjusted $R^2 = 0.36$
					F-statistics = 5.27
Productivity	0.72***	-0.91**	-0.14*	-2.81*	$R^2 = 0.41$
					Adjusted $R^2 = 0.39$
					F-statistics = 8.10

Note: '***', '**' and '*' indicate significance at one, five and ten percent level, respectively.

the ground realities of Pakistan where 400,000 losses of jobs are due to the industrial load shedding (World Bank, 2000). These fluctuations have multifaceted impacts on other macroeconomic variables like inflation etc [15,16].

DISCUSSION AND CONCLUSIONS

The study tried to identify the puzzle of jobless growth in the manufacturing sector of Pakistan. The study used the panel data collected by World Bank Enterprise Survey for the period of 2002-07. The study investigates the existence of jobless growth in Pakistan. Labour has been divided into four categories; production, non-production, skilled and un-skilled. The industry level results explored that non-production workers are being under-utilized except Chemical industry. Moreover, production workers are under-utilized in textile and garments and other manufacturing. The skilled workers are under-utilized in the Chemicals and other manufacturing while un-skilled workers are under-utilized in machinery and equipment and other manufacturing. Results of the regional analysis explored over-utilization in Karachi and Sialkot, while under-utilization Peshawar and Quetta.

The results reveal that behind the jobless growth the labour underemployment can be one of the dynamic forces. The skills of the labourer are mismatched with the demand of the industries. The results of the over-utilization of capital might be due this mismatch factor, hence firms substitute capital instead of labour. There is a need to give demand driven vocational trainings to the workers. In order to control the massive unemployment there is a need to control the industrial load shedding. The problem of load shedding has dual effects on firm's production; firstly increase cost of production (when electricity is being produced by generators), secondly the firms operate below their capacity. Hence, results the under-utilization of labour and capital.

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